

Trend Study 10-15-00

Study site name: East Thompson Bench .

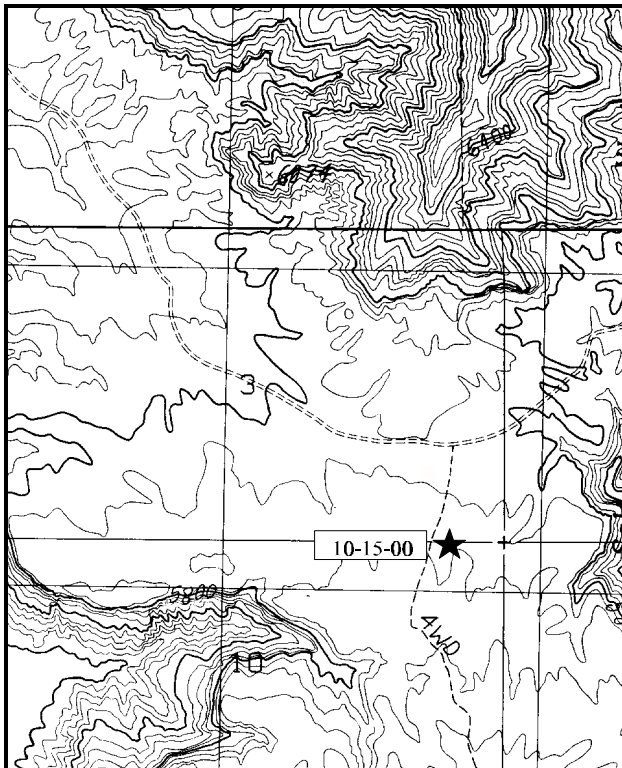
Range type: Pinyon-Juniper .

Compass bearing: frequency baseline 170°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). No rebar marking belt placement on belts 1 and 4

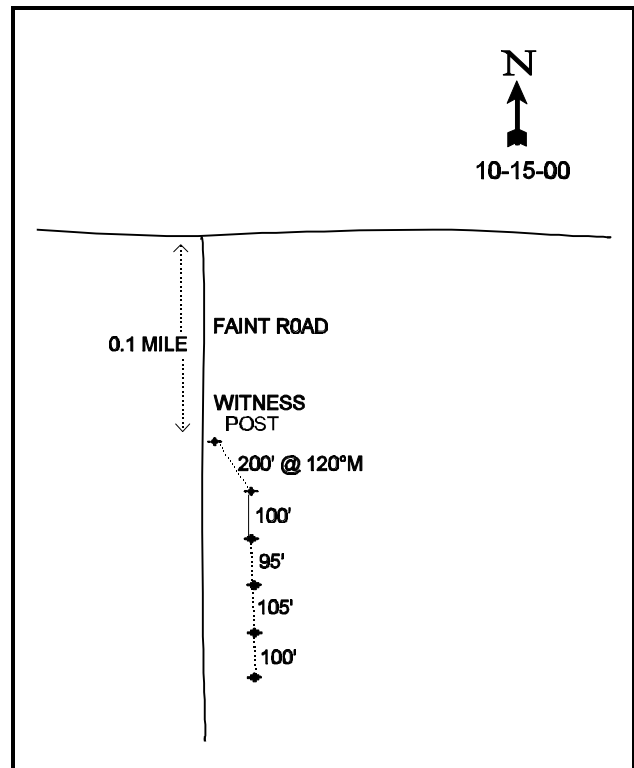
LOCATION DESCRIPTION

From the railroad crossing in the town of Thompson, travel 1.3 miles north up the main road to a fork. Stay left and go 2.2 miles to the Thompson Canyon pictographs. Continue 0.4 miles. Make a sharp right turn and go 0.2 miles past an old house and a railroad cut to a fork. Turn right across a deep gully and go 1.15 miles to a fork. Stay left and continue 0.55 miles to a very faint road on the right. Turn on this road and go 0.1 mile to a witness post (a steel rebar) on the left side of the road. The first baseline post is 200 feet away at a bearing of 120°M from the witness post.



Map Name: Sego Canyon

Township 21S , Range 20E ,Section 3



Diagrammatic Sketch

UTM. 4318244.980 N, 613735.462 E

DISCUSSION

Trend Study No. 10-15 (16B-2)

The East Thompson Bench transect is located on a low lying bench east of Thompson Canyon at an elevation of 5,800 feet. It is a broad flat bench, dominated by junipers and intermixed with small openings of Wyoming big sagebrush. The bench has a gentle slope with a northern aspect. Water is limited in the area, but spring runoff flows through most of the intermittent washes in late winter or early spring. This site is located within the large Cisco Allotment which is grazed from November 1st to May 10th by 3 cattle permittees. Two sheep permittees also use the allotment from December through early May. In 1986, the BLM reported 61% use in the Thompson Bench area by sheep. In the past, the area was thought to be used heavily by deer, but data from 1995 and 2000 indicate this is not the case in recent years. In 2000, pellet group transect data estimate 35 deer days use/acre (86 ddu/ha) and 1 elk day use/acre (2 edu/ha). Two-thirds of the deer pellet groups were sampled on the first 200 feet of the transect where the area is in a sagebrush opening. Pellet groups decrease in frequency as you move into the pinyon-juniper further down the transect baseline.

Soil texture is a sandy clay loam and is reddish in color. The soil has moderate depth as indicated by the estimated effective rooting depth of over 17 inches. Average soil temperature is 61°F at 18 inches. The soil is slightly alkaline (pH of 7.5) with phosphorus (1.7 ppm) and potassium (48 ppm) being lower than the 10 ppm and 70 ppm shown necessary for normal plant growth and development. Organic matter is very low at less than 1%. There is little soil protection from vegetation and litter in the shrub interspaces. Several small active gullies are present, but due to the gentle terrain, erosion is not severe. Soil movement is most evident on trails or where the soil has been disturbed. Most of the litter and cryptogams are located directly beneath the canopy of the Wyoming big sagebrush. There is less than 1% cover contributed by rock and pavement combined.

Utah juniper is the predominant species, and it provided 67% of the browse cover in both 1995 and 2000, and over half of the total vegetative cover in both years. These are primarily large, mature trees that are estimated at 84 trees/acre from point-centered quarter data in 2000. Pinyon pine are present, but are much less abundant than juniper at an estimated 9 trees/acre.

The preferred key browse species is Wyoming big sagebrush with an estimated density of 1,680 plants/acre in 1995 and 1,960 plants/acre in 2000. In 1986, the small openings were not sampled very well and a lower plant density was estimated. With the increased sample size used beginning in mid-1992, a much better estimate was gathered in 1995 and 2000. Mature sagebrush currently averages nearly 1½ feet in height with a crown of 2 ½ feet. Leader growth was noted as being poor on most plants in 2000, with only a few plants having leaders up to 5 inches in length. Fifty-two percent of the population was decadent in 1986, decreasing to 42% in 1995 and then up slightly to 45% in 2000. The proportion of decadent plants classified as dying was 46% in 1995, increasing to 64% in 2000. Recruitment from young plants increased from 7% in 1995 to 34% in 2000. The number of young is currently adequate to replace the decadent, dying plants in the population. The proportion of the population in poor vigor has been high over all sampling years and is currently at 29%. Over grazing in the past, coupled with the extended drought and winter injury, has lead to much of the crown death and is likely the cause for increasingly poor vigor, high decadency, and the proportion of decadent plants classified as dying.

Other browse at this site include green ephedra and broom snakeweed. Ephedra density is currently estimated at 40 plants/acre with half being decadent. Snakeweed density was estimated at 1,160 plants/acre in 1995, decreasing to 860 plants/acre in 2000.

Cheatgrass and sixweeks fescue were the dominant grass species in 1995 as they combined to provide 34% of the herbaceous cover. However, cheatgrass significantly decreased in frequency and sixweeks fescue was not sampled in 2000 due to the drought. Galleta grass is the most abundant perennial grass followed by bottlebrush

squirreltail. Perennial grasses occur sporadically throughout the site and are in low abundance. Perennial grasses remained at stable frequencies in 2000.

Forbs are sparse and not significant on this site. The most abundant perennial forb, timber poisonvetch, showed signs of use by insects in 1986, but not in 1995 or 2000. Although considered palatable by all classes of livestock, this plant is in some instances toxic, and in others, a highly nutritious plant (high protein content). Other perennial forbs encountered include: longleaf phlox, low fleabane, and sego lily. Sum of nested frequency for perennial forbs increased in 1995, but again decreased by half in 2000. Annual species dominated the scant forb understory in 1995 due to the unusually wet spring. However, due the drought in 2000, annuals were greatly reduced.

1986 APPARENT TREND ASSESSMENT

Due to a declining Wyoming big sagebrush population and apparent invasion of junipers and broom snakeweed, the vegetative trend appears to be declining. A treatment for the juniper and/or rest from winter sheep use would be desirable, but neither is called for in the management plan. The soil appears stable.

1995 TREND ASSESSMENT

The Wyoming big sagebrush population is showing slight improvement. Seventy-four percent of the plants were heavily hedged in 1986, decreasing to 24% in 1995. There are nearly as many dead as there are living plants with 45% of the decadent plants classified as dying. Percent decadency slightly decreased in 1995 to 42%. Broom snakeweed was sampled and does not appear to be increasing in density or young age class. With the improvement in Wyoming big sagebrush and an apparently decreasing broom snakeweed population, the browse trend is slightly upward. Annual grasses do not dominate the understory of this site like they do on surrounding sites, but they do make up over 80% of the herbaceous cover. Sum of nested frequency for galleta and Indian ricegrass significantly decreased since 1986, while the increased sample size detected *Elymus* spp. and mutton bluegrass. The changes in composition of the grass species is likely due to a larger sample size and a better distribution of sampling over the entire site. Forbs add very little to the site and are found primarily beneath the sagebrush crowns. The herbaceous understory trend is stable for now and more of a trend will be evident the next time the site is evaluated. There is little soil movement or pedestaling evident on the site. Soil trend is stable with most of the erosion coming from disturbed areas. Previously, nested frequency was collected only in the sagebrush opening and not in the denser patches of trees. Also, a more accurate Utah juniper density is achieved by sampling throughout the entire vegetation type and not only in the more dense portions of the Utah juniper stand.

TREND ASSESSMENT

soil - stable (3)

browse - slightly upward for Wyoming big sagebrush (4)

herbaceous understory - stable, but poor with too many annuals (3)

2000 TREND ASSESSMENT

Trend for soil is slightly down due to increased bare ground cover and a lower ratio of protective ground cover to bare soil. Several gullies are present underneath the juniper trees, although these are small, they are nonetheless active. Trend for browse is stable but in poor condition. Even though recruitment from the young age class increased to a high level (34%), percent decadency still remains high at 45% with 64% of these classified as dying. There are nearly as many dead plants as there are live in the population the last two sampling years. However, there appears to be currently enough young plants to replace the decadent/dying sagebrush. In addition, there is less heavy use than was reported in 1995. The site is still dominated by an

overstory of Utah juniper which has an overhead canopy cover value of 14%. Juniper cover will continue to increase and eventually begin to negatively effect the sagebrush to a greater degree. Trend for the herbaceous understory is stable, but depleted. Perennial grasses show a very slight decrease in sum of nested frequency from 163 to 156. Perennial forbs decreased to half of the sum of nested frequency value reported in 1995, however, they provide less than 1% average cover.

TREND ASSESSMENT

soil - slightly down (2)

browse - stable but in poor condition (3)

herbaceous understory - stable, but depleted (3)

HERBACEOUS TRENDS --

Herd unit 10 , Study no: 15

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'86	'95	'00	'86	'95	'00	'95	'00
G	Bromus tectorum (a)	-	_b 190	_a 33	-	73	14	1.41	.07
G	Elymus salina	_a -	_b 29	_b 15	-	11	6	.63	.52
G	Hilaria jamesii	_b 129	_a 65	_a 83	54	25	30	.74	1.97
G	Oryzopsis hymenoides	_b 14	_a 1	_{ab} 4	6	1	3	.03	.17
G	Poa fendleriana	_a -	_b 16	_b 5	-	6	4	.03	.02
G	Sitanion hystrix	49	52	49	23	25	23	.83	.36
G	Vulpia octoflora (a)	-	_b 186	_a -	-	58	-	.44	-
Total for Annual Grasses		0	376	33	0	131	14	1.85	0.07
Total for Perennial Grasses		192	163	156	83	68	66	2.27	3.05
Total for Grasses		192	539	189	83	199	80	4.12	3.12
F	Alyssum alyssoides (a)	-	_a -	_b 18	-	-	8	-	.04
F	Astragalus convallarius	13	21	20	7	9	8	.27	.26
F	Astragalus spp.	-	5	5	-	3	2	.01	.01
F	Castilleja linariaefolia	9	8	-	3	4	-	.04	-
F	Calochortus nuttallii	_a -	_b 17	_a 1	-	8	1	.04	.00
F	Chenopodium fremontii (a)	-	1	-	-	1	-	.00	-
F	Cryptantha spp.	_a -	_b 14	_a -	-	7	-	.03	-
F	Descurainia spp. (a)	-	_b 26	_a -	-	10	-	.05	-
F	Eriogonum cernuum (a)	-	3	-	-	2	-	.01	-
F	Erigeron pumilus	2	6	5	2	4	2	.04	.01
F	Euphorbia spp.	-	1	1	-	1	1	.00	.00
F	Gilia hutchinifolia (a)	-	_b 72	_a 3	-	31	2	.20	.01
F	Lappula occidentalis (a)	-	6	-	-	3	-	.01	-
F	Lepidium densiflorum (a)	-	_b 139	_a -	-	47	-	.51	-
F	Phlox longifolia	13	10	8	5	3	3	.01	.01

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'86	'95	'00	'86	'95	'00	'95	'00
F	Ranunculus testiculatus (a)	-	-	1	-	-	1	-	.00
F	Schoenocrambe linifolia	-	2	-	-	1	-	.00	-
F	Sisymbrium altissimum (a)	-	5	-	-	2	-	.01	-
F	Unknown forb-perennial	1	-	-	1	-	-	-	-
Total for Annual Forbs		0	252	22	0	96	11	0.81	0.05
Total for Perennial Forbs		38	84	40	18	40	17	0.47	0.31
Total for Forbs		38	336	62	18	136	28	1.28	0.36

Values with different subscript letters are significantly different at $\alpha = 0.10$ (annuals excluded)

BROWSE TRENDS --

Herd unit 10 , Study no: 15

T y p e	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Artemisia tridentata wyomingensis	39	38	5.23	6.04
B	Chrysothamnus viscidiflorus stenophyllus	0	1	-	-
B	Ephedra viridis	3	2	.00	.00
B	Gutierrezia sarothrae	22	20	.43	.43
B	Juniperus osteosperma	0	12	11.85	13.11
B	Opuntia spp.	2	2	.15	.00
Total for Browse		66	75	17.68	19.60

CANOPY COVER --

Herd unit 10 , Study no: 15

Species	Percent Cover
	'00
Juniperus osteosperma	14

BASIC COVER --

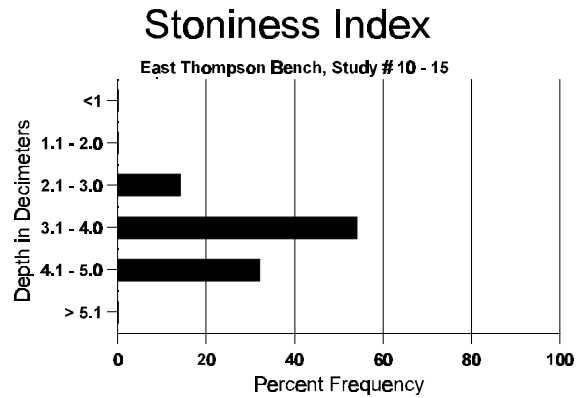
Herd unit 10 , Study no: 15

Cover Type	Nested Frequency		Average Cover %		
	'95	'00	'86	'95	'00
Vegetation	321	190	8.25	26.71	25.85
Rock	16	5	0	.68	.15
Pavement	28	19	0	.10	.75
Litter	382	339	40.25	34.96	34.76
Cryptogams	203	183	4.25	9.87	13.65
Bare Ground	255	317	47.25	30.85	47.48

SOIL ANALYSIS DATA --

Herd Unit 10, Study # 15, Study Name: East Thompson Bench

Effective rooting depth (inches)	Temp °F (depth)	pH	% sand	% silt	% clay	% OM	PPM P	PPM K	dS/m
17.24	61.0 (18.03)	7.5	50.0	28.0	22.0	0.7	1.7	48.0	0.6



PELLET GROUP FREQUENCY --

Herd unit 10 , Study no: 15

Type	Quadrat Frequency	
	'95	'00
Sheep	22	-
Rabbit	43	36
Elk	-	8
Deer	19	19

Pellet Transect	
Pellet Groups per Acre 00	Days Use per Acre (ha) 00
-	-
226	N/A
9	1 (2)
461	35 (88)

BROWSE CHARACTERISTICS --

Herd unit 10 , Study no: 15

Artemisia tridentata wyomingensis																	
A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
S	86	1	-	-	-	-	-	-	-	-	1	-	-	-	33		1
	95	26	-	-	1	-	-	-	-	-	27	-	-	-	540		27
	00	1	-	-	1	-	-	-	-	-	2	-	-	-	40		2
Y	86	-	4	-	-	-	-	-	-	-	4	-	-	-	133		4
	95	6	-	-	-	-	-	-	-	-	6	-	-	-	120		6
	00	33	-	-	-	-	-	-	-	-	33	-	-	-	660		33
M	86	-	2	5	-	-	2	-	-	-	7	2	-	-	300	18 20	9
	95	9	17	17	-	-	-	-	-	-	43	-	-	-	860	20 31	43
	00	4	4	4	-	8	1	-	-	-	21	-	-	-	420	21 29	21
D	86	-	1	8	-	-	5	-	-	-	8	1	1	4	466		14
	95	13	19	2	-	-	1	-	-	-	19	-	-	16	700		35
	00	5	16	-	2	19	2	-	-	-	16	-	-	28	880		44
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	1460		73
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	1160		58
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'86		26%			74%			19%			+46%						
'95		43%			24%			19%			+14%						
'00		48%			07%			29%									
Total Plants/Acre (excluding Dead & Seedlings)												'86	899	Dec:	52%		
												'95	1680		42%		
												'00	1960		45%		
Chrysothamnus viscidiflorus stenophyllus																	
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'86		00%			00%			00%									
'95		00%			00%			00%									
'00		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'86	0	Dec:	-		
												'95	0		-		
												'00	20		-		

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Ephedra viridis																		
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	95	2	-	-	1	-	-	-	-	-	3	-	-	-	60	16	3	
	00	-	-	-	-	-	1	-	-	-	1	-	-	-	20	9	1	
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	-	-	-	1	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%										
'95		00%			00%			00%			-50%							
'00		00%			50%			50%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	0	Dec:	0%			
												'95	80		0%			
												'00	40		50%			
Gutierrezia sarothrae																		
S	86	1	-	-	-	-	-	-	-	-	1	-	-	-	33		1	
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	86	11	-	-	-	-	-	-	-	-	11	-	-	-	366		11	
	95	13	-	-	2	-	-	-	-	-	15	-	-	-	300		15	
	00	6	-	-	-	-	-	-	-	-	6	-	-	-	120		6	
M	86	93	-	-	-	-	-	-	-	-	93	-	-	-	3100	8	7	
	95	39	-	-	4	-	-	-	-	-	43	-	-	-	860	8	8	
	00	24	-	-	1	-	-	-	-	-	25	-	-	-	500	6	8	
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	10	-	-	1	-	-	1	-	-	9	-	-	3	240		12	
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	80		4	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%			-67%							
'95		00%			00%			00%			-26%							
'00		00%			00%			07%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	3466	Dec:	0%			
												'95	1160		0%			
												'00	860		28%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Juniperus osteosperma																		
S	86	1	-	-	-	-	-	-	-	-	1	-	-	-	33		1	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
Y	86	3	-	-	-	-	-	-	-	-	3	-	-	-	100		3	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
M	86	3	-	-	-	-	-	-	-	-	3	-	-	-	100	94	104	3
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	7	-	-	2	-	-	3	-	-	12	-	-	-	240	-	-	12
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	200	Dec:	-			
												'95	0		-			
												'00	260		-			
Opuntia spp.																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	1	-	-	-	-	-	1	-	-	-	20		1	
M	86	1	-	-	-	-	-	-	-	-	1	-	-	-	33	7	7	1
	95	1	-	-	-	-	-	1	-	-	2	-	-	-	40	6	12	2
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	5	14	1
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'86		00%			00%			00%			+18%							
'95		00%			00%			00%			+ 0%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'86	33	Dec:	-			
												'95	40		-			
												'00	40		-			